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ABSTRACT

In 1995 the Metropolitan Educational Research Consortium (MERC), Richmond (Virginia) commissioned a study of alternative high school scheduling modules to determine the effects of different schedules on teaching strategies, teacher and student satisfaction, and student and school performance. This report presents results of an analysis of student achievement and behavior data from 12 high schools, 3 inner city, 5 suburban, and 4 rural. Two traditional-day schedules and four variations of block scheduling were compared. Teachers and students in alternating and semester block schools reported that learning is not watered down, but that it is different, with more focus on concepts than facts, more depth, and more problem solving. Students in semester block schedules experienced greater increases in overall grade point average than those in alternating block schedules. In general, verbal scores rose more in schools that switched to an alternating or semester block schedule than mathematics. Increases in Scholastic Aptitude Test scores were greater for students in alternating block schedules than for students in semester block schools, but after the first year, students in four of the seven schools that switched to either type of block scheduling experienced increases in verbal scores. In two of four alternating block schools, student performance on advanced placement tests declined, as it did in the two semester block schools. Overall, attendance was not positively affected by the change, but in both alternating and semester block schools, students reported that school was "calmer" and teachers made fewer disciplinary referrals. (Contains 13 tables and 15 references.) (SLD)

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ED 411 337

ALTERNATIVE HIGH SCHOOL SCHEDULING

Student Achievement and Behavior

Research Report

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ALTERNATIVE HIGH SCHOOL SCHEDULING

Student Achievement and Behavior

Research Report

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January 1997

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Executive Summary
Alternative High School Scheduling
Student Achievement and Behavior

In 1995, the Metropolitan Educational Research Consortium (MERC) commissioned a study of school scheduling models to determine the effects of different high school schedules on teaching strategies, teacher and student satisfaction, and student and school performance. This briefing paper, our third report of the data, presents the results of the analysis of the student achievement and behavior data. For example,

1. Teachers and students in Alternating and Semester Block schools report that learning is not "watered down," but that it is "different." There is more focus on concepts than facts, teachers go more in depth on subject matter, and that learning is easier only to the extent that students have only four classes a day or semester. Students experience more problem solving and information processing skills. Leaning is more intense in Semester Block schools.

2. Students in Semester Block schedules experienced greater increases in overall GPA than students in Alternating Block schedules. However, students in Alternating Block schedules for the most part, also experienced gains in their overall GPA. The gains in overall GPA experienced in Semester and Alternating Block schedules are attributed to the increase in elective courses students are able to take because of increased opportunities.

   Science grades of students in Semester Block schools experienced higher increases (24% above 3.5 to 39% above 3.5) after the change of schedule than schools on Alternating and Short Block schedules. English grades in the Semester Block schools were also higher than Alternating Block schools. Other core subject area grades were relatively unaffected by changes to alternative schedules.

3. In general, verbal scores rose to a greater extent than math scores in schools which changed to an Alternating or Semester Block schedule. For example, over the lifetime of the schedule change, (in some cases 1yr, and others 4 years) verbal scores rose in six of the seven schools with data beyond the first year of the change. On the other hand, one year after the change, three of the seven schools which changed to an Alternating or a Semester Block schedule experienced increases in SAT math scores.

   In particular, students in Alternating Block schools experienced greater increases in SAT scores than students in Semester Block schools. However, one year after the schedule change, four of the seven schools which changed to an Alternating or a Semester Block schedule experienced rising SAT verbal scores. Two and three years after the schedule change, four of the five Alternating Block scheduled schools experienced increases in verbal scores.

4. Alternating Block schools experienced more immediate increases in TAP scores than Semester Block schools. However, only one Alternating Block school was able to maintain its improvement over the lifetime of the change (from 2 to 4 years). On the other hand, one Semester Block school demonstrated a 3% increase in TAP scores after three years.

5. Two of the four Alternating Block scheduled schools experienced decline in the percentage of students who scored at three or better on the advanced placement tests. In the two Semester Block schools, the percentage of students who scored at three or better on the advanced placement tests declined.

6. Overall, attendance has not been positively effected by the change to Alternating Block or Semester Block schedules. In fact, students in Alternating Block scheduled schools indicate that "skipping school" is easier than traditionally scheduled schools.

7. In the Semester and Alternating block schools, there is a general consensus that the school was "calmer," and teachers made fewer discipline referrals.

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In 1995, the Metropolitan Educational Research Consortium (MERC) commissioned a study of alternative high school schedules to determine their effects on teaching strategies, teacher and student satisfaction, and student and school performance. Two previous papers emanating from this study reported the views of teachers and students regarding alternative schedules in twelve high schools utilizing different scheduling alternatives to address. This paper uses commonly collected statistical data, and survey and interview responses from those same schools to determine the impact of alternative schedules on student achievement and behavior.

BACKGROUND. The schedule is a structural component high school schools use to organize curriculum, and its delivery, and control student interactions. This important tool has a long history. In 1910, the Carnegie Foundation proposed 120 hours in one subject as a standard time unit to measure the worth of a high school credit. Their "Carnegie Unit." became the structural component on which schools organized and delivered the curriculum and led to the everyday schedules where classes meet 4 or 5 times a week, for 40 to 60 minutes, for 36 to 40 weeks each year. Over the years, several attempts have been made to move away from the everyday Carnegie based schedules. In the late 1960's and early 1970's "flexible modular" schedules sought to replace lock step schedules with class periods of varying lengths of time.

In the late 1980s, reformers attempted to make schools more efficient and effective by imposed additional graduation requirements and changed the order and delivery of

curricula. They also focused on strategies such as outcome-based education, alternative assessment, interdisciplinary teaching, site-based management, essential schools, Paideia seminars, cooperative learning, and technology infusion. Block scheduling was offered as a way to facilitate the reforms. From 1988 to the present, block scheduling, which organizes at least part of the daily school schedule into blocks of time larger than 60 minutes was seen as a centerpiece of high school restructuring efforts. Today, at least 14 percent of all high schools use some form of block scheduling.

Advocates propose that block scheduling should accomplish three main intentions: (1) foster teacher classroom and work behaviors which supports greater student involvement in the learning process, (2) create better working conditions for students and teachers, and (3) not lower standards. The block scheduling advocates assume that if changes are made in the structure which allow new strategies to be implemented school and student achievement will improve.

While research on these claims are scarce, the research that is available is conflicting. On the one hand, schools that have implemented block scheduling report that decreases in discipline problems and dropout rates and increases in attendance, grade-point averages, and in some case's failure rates. On the other hand, several Canadian studies report a negative effect on achievement as recorded by national standardized exams (Bateson, 1990; 1995; Ministery of Education and Training). And, a North Carolina Department of Education study (1996) reported that scores had neither increased nor decreased. The

generally accepted view is that teachers and students like longer classes, and that students do at least as well on measures of academic achievement (O'Neil, 1995) which would be supportive of the advocates claims that block scheduling should be considered successful if it does not lower standards. Other voices, while fundamentally accepting the advocates purposes, seek evidence that changes in school structures and processes lead to greater productivity. As Carroll, (1994) said, "the key question is whether a new program is improving education, based on measures that the profession and the public will accept as "solid."

METHODOLOGY. The study used a non-experimental pre and post comparison of the data. The study does not meet the randomization, manipulation of treatment, and use of control group requirements of an experimental design which would lead to inferences to a true cause and effect relationship. A summary of methodology is found on Table 1.

Table 1
Summary of Research Questions, Data Sources and Analytic Techniques used in this Study

Research Questions	Data Sources	Analytic Technique
What effect does the schedule have on student behavior? *What effect does the schedule have on student performance?*	Three sources of information were used to collect the data to answer the research questions. Statistical student and school performance data from each of the twelve schools was collected, reviewed and analyzed. These analyses were supplemented by (1) student, teacher and administrator perceptions at the twelve schools, and (2) on-site visits and administrator interviews conducted at twelve schools. At seven of the schools, focus group interviews with teachers, students, and parents were conducted.	The performance measures were examined to determine whether student performance increased or decreased after the adoption of the schedule. To do this, the mean pre schedule performance levels were compared with the mean post schedule levels.

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SCHEDULES STUDIED. Table 2 displays six high school schedules used in this study.

Table 2
The Characteristics of Schedules used in this Study

Schedule	Schedule Type	Schools Studied	Characteristics
EVERY DAY SHORT BLOCK	Traditional Six Period	1	Everyday 6 period schedule, meets 5 times a week, 50-60 minutes daily, and 36 to 40 weeks each year. Teachers teach 5 classes daily of approximately 25 students for full year.
	Seven Period Day	2	Everyday 7 period schedule meets 5 times a week, 40-51 minutes daily, and 36 to 40 weeks each year. Teachers teach 5 classes daily of approximately 25 students for full year.
ALTERNATING DAY LONG BLOCK	Alternating Block # 1	3	Alternating day 7 period schedule. meets 88-104 minutes daily, and 36-40 weeks per year. Three classes meet on alternating days 2-3 times per week, and one (45 minute) class meets daily for a full year. Teachers teach 3 classes daily of approximately 25 students for full year.
	Alternating Block # 2	1	Alternating day 7 period schedule, meets 90 minutes daily, 36-40 weeks per year. Four classes meet on alternating days 2-3 times per week. One block is used as a study block. Teachers teach 3 classes daily of approximately 25 students for full year.
	Alternating Block # 3	2	Alternating day 7 period schedule, meets 88-90 minutes daily, 36-40 weeks per year. Four classes meet in block on alternating days 2 times per week. On Friday's each of the classes meet for 40 minute periods. Teachers teach 3 classes daily on block days of approximately 25 students for full year.
EVERY DAY LONG BLOCK	Semester Block	3	Everyday schedule, 4 classes meets 85-90 minutes daily, 18-20 weeks per year. A second set of 4 classes meet daily for the second semester. Teachers teach 3 classes daily of approximately 25 students each semester.

Of the twelve schools which participated, three schools were classified as inner city schools, five schools were classified as suburban schools and four schools were classified as rural schools.

VARIABLES STUDIED. The impact of the schedule on teacher behavior, student performance, and teacher satisfaction was studied. The independent and dependent variables are displayed in Table 3.

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TABLE 3 The Independent and Dependent Variables used in the Study	
Dependent Variables	*Independent Variables*
	The Structural Context
Student Performance (1) Perceptions of student achievement, (2) Student Grades (3) Scores on standardized tests (TAP, SAT, AP). Student Behavior (1) Perceptions of student attendance and discipline, (2) Rates of student attendance and suspensions.	Schedule Characteristics such as (1) type of schedule, (2) purpose of choosing the schedule, (3) number of years on the schedule, and (4) number of minutes in a teaching block.

AFFECT OF SCHEDULES ON STUDENT BEHAVIOR

The advocates of alternative high school schedules claim that they improve attendance and student discipline. In this section, student attendance, dropouts, and classroom and school discipline are assessed to determine the extent to which these claims are accurate.

ATTENDANCE

Student attendance was examined in two ways. The teacher and administrator surveys asked for perceptions related to the increase of attendance at the school and focus group interviews. Then student attendance statistics were examined to contrast perceptions to actual student attendance levels.

The perceptions expressed by teachers and students in the surveys and focus group interviews were reviewed against statistical data provided by the schools participating in the study. Two types of data were reviewed. The average daily attendance rates (ADA) for each school were examined first. Finally, drop out rates at the schools in our sample were examined.

Teacher Perceptions. Attendance was the focus of one statement on the teacher and administrator surveys, "Student attendance in classes has gotten better." The responses to this question indicate that teachers, when compared with their counterparts working in other schedules, reported significantly different levels of satisfaction with attendance in their classes than three years ago. For example, Pisapia and Westfall (1996) reported that

- Teachers in Semester Block schools (m=.66; Eta=.13) report that attendance is significantly better than schools employing alternating long block schedules, (m=-.24), and everyday short block schedules (m=.01) (p. 10)
- Teachers in 104 minute schedules are the least satisfied (-.67) that attendance in their classes has improved in the last three years (p 13).
- The schedule (Eta=.16), block minutes (Eta=.08), and teacher subject area (Eta=.16) are reliable predictors of teacher satisfaction with attendance in their classes this year as compared to three years ago (p. 13).

ADA. Average daily attendance is one measure of student attendance at school. Table 4, displays the averaged daily attendance of students in the twelve schools participating in tnis study. Average Daily Attendance (ADA) was computed using information the School Division reports to the Virginia Department of Education. Nine of the twelve schools changed the schedule. Three schools in the sample did not experience a change in a schedule. In two short block schools (one six period and one seven period schedule), they continued the same schedule for at least ten years. In one Semester Block school, it opened its doors under the Semester Block schedule and thus did not experience a change in the schedule. The results of this analysis showed that:

- In the year after the schedule changes of the nine schools that changed their schedule, two schools increased their attendance rates by at least one percent the year after the change in schedules. Three schools experienced a drop their attendance rates of at least one percent the year after they changed their schedules. Attendance rates in the remaining four schools remained the same. In the two short block schools that did not change their schedules, one school experienced a decrease their attendance rates, and the other school's attendance rates remained the same

Table 4
School Performance Indicator: Attendance

Student Performance Before and After Scheduling Change									Change Period	
	1 yr before		1 yr after		2 yrs after		3 yrs after		1yr	Life of
ADA	N	%	N	%	N	%	N	%	N	%
Short Block										
SXP	2045	97%	1370	96%	No Change in Schedules				+1	0
SP1	1116	93%	1141	93%	No Change in Schedules				-1	-1
SP2	625	95%	655	95%					0	+1
Alternating Block										
AB11	1004	96%	1051	97%	1159	97%	1245	97%	+1	+1
AB12	1816	95%	1814	92%					-3	-2
AB13	1637	96%	1546	96%	1451	96%			0	0
AB2	1170	95%	1053	95%	1097	94%	1145	95%	0	0
AB31	612	89%	573	86%	565	88%			-3	-1
AB32	744	90%	729	92%					+2	0
Semester Block										
SB12	1776	97%	1586	95%					-2	0
SB13	1705	93%	1704	93%	1673	94%	1627	94%	0	+1
SB11	New School		1239	95%						

- Two schools on Alternating Block schedules experienced an increase in attendance the year after the schedule change. Two schools remained the same. Attendance decreased in two schools. Of significance the Alternating Block school with the lowest rate of attendance decreased after the schedule change.

- The schools on Semester Block schedules showed similar inconsistencies. One school experienced decreases in student attendance. Attendance rates at the second school remained the same the year after the schedule change, but demonstrated a sustained one percent increase in subsequent years after the schedule change.

In general, it is relatively clear that overall attendance has not been positively effected by the change in schedules. The focus group interviews provided some justification, particularly in the schools on an Alternating Block schedule, that the increases or

decreases in school and class attendance may be related to schedule changes. For example,

Alternating Block Teacher Comments:

- "... more kids skip school and cut classes than before because they have figured out there's a lot of time you get caught too. If you miss a class that meets Tuesday/Thursday, and you skip Tuesday and Thursday Mom writes you a note and you come in on Monday, depending on what the principal's dealing with, it's like any kind of reinforcement, you got caught, but you're willing to take the chance."
- "The attendance issue not necessary coming to the first period where you check the attendance, but it is skipping after the attendance is taken. I think kids are more apt to give it a try, where before . . . the next day, maybe they will forget and I will fall through the cracks. I think kids are more apt to cut than they were before."
- "The ones who are there every day are actually making better grades than I thought they would have. But the ones who are absent are, it really affects their grades terribly when they're absent one day."
- "When they miss 1 day it's like they missed 2 days worth of material."

Alternating Block Student Comments:

- "It makes it a lot easier for people to skip classes. I know that . . . "
- More kids skip class and school now because of a "lag time" in getting caught.
- "... more kids skip school and cut classes than before because they have figured out there's a lot of time you get caught too. If you miss a class that meets Tuesday/Thursday, and you skip Tuesday and Thursday Mom writes you a note and you come in on Monday, depending on what the principal's dealing with, it's like any kind of reinforcement, you got caught, but you're willing to take the chance."

Semester Block Teacher Comments:

- "I [taught in] the 7-period every other day schedule, and of course the straight 6 before that. I think with this [Semester Block] schedule, it's easier for kids compared to the every other day schedule to make up things because you get them, boom, the next day. When you're seeing the child every other day and they're absent one day, it's really kind of a nightmare to keep track of, when did I last see you, etc? And that gets to be... your head really can spin on that one."
- "Well I remember we had a speaker from N.C. who said you have to be really strict. You can only have a certain number of absences...at first our absences were better, but this semester... But being the first year, not having all the electives that are going to hopefully become available in the future, and hopefully a change in attitude of the kids. In terms of a 4 period day, why is it our problem if they want to cut out early? That's not the fault of the schedule--that's an attendance problem.... .I wish the county had allowed us to try all the things that the guy from N.C. suggested. Like a few more faculty members, give us an attendance policy; that type of thing.

On the other hand, the anecdotal data also suggest that students in Alternating and Semester Block schools do not like to miss school because they miss too much work.

Alternating Block Student Comment:

- (Interviewer: "Is it easier to make up the work or harder?") Well, you miss all the material. You can't make up a lecture. I wouldn't want too anyway."
- "If you miss a day, you miss a week... If you missed a day last year... and if you miss a day this year, it's like 4."

Semester Block Parent Comments:

- "When my daughter was out with the flu, she did feel a little lost, but she only had 4 things to concentrate on to makeup, so I don't know that it was any worse than if she had...she did feel math was a lost class because she had already missed so many days and they had gone so much farther along."
- "My son is far less willing to miss a day of school than before (even for illness) because of all you would miss.
- "He doesn't like to miss school at all, so he goes even when he's sick; because of car pool and class commitments.

Dropouts. A third source of attendance related data, dropout rates, were examined to decide an effect of changing the schedules. Dropout rates for schools before and after schedule changes are displayed in Table 7. The results of this analysis showed that in the nine schools that changed their schedule, the year after the schedule changed

- Drop out rates in three schools increased by at least one percent the year after the change in schedules. Three schools experienced a drop their attendance rates of at least one percent the year after they changed their schedules. Drop out rates in the remaining three schools remained the same. In the two short block schools that did not change their schedules, one school experienced an increase in dropouts, and the other school's dropout rates remained the same.

- Three schools on alternating long block schedules experienced a decrease in dropout rates the year after the schedule change. Two schools remained the same. Dropout rates increased in two schools. Of significance, the Alternating Block schools with the highest rates of dropouts decreased after the schedule change. However, in subsequent years dropout rates demonstrated a rise again.

- The schools on Semester Block schedules showed similar inconsistencies. One school experienced an increase in dropouts the year after the schedule change. Dropout rates at the second school decreased the year after the schedule change, and, although displaying fluctuations, sustained an overall two percent decrease in the three years after the schedule change.

Table 7
Dropout Rates Before and After Scheduling Changes

Student Drop Out Rates Before and After Scheduling Change									Change Period	
	1 yr before		1 yr after		2 yrs after		3 yrs after		1yr	Life of
Short Block										
SXP	39	2%	20%	1%	No Change in Schedule				0	-1
SP1		3%		5%	No Change in Schedule				-2	0
SP2	50	7%	49	7%					0	-1
Alternating Block										
AB11	New School		0	0%	0	0%	4	0%	0	0
AB12	107	6%	156	8%					+2	+3
AB13	55	3%	35	2%	31	2%			-1	-1
AB2	31	2%	25	2%	16	1%	12	1%	0	-1
AB31		12%		5%		8%			-7	-4
AB32		9%		7%		11%			-2	+2
Semester Block										
SB12	36	2%	59	4%					+2	+1
SB13	115	7%	86	5%	110	7%	54	3%	-2	-4
SB11	New School		52	4%						

In summary, these analyses of attendance did not show the expected improvements in attendance that advocates of alternative schedules project as a benefit of such schedules. In Alternating Block scheduled schools, the data support a conclusion that attendance may be negatively affected by schedule. Two factors may be adding to the decreases in attendance. On the one hand, it seems that skipping a class is easier. On the other hand, as Pisapia and Westfall, (1995) noted lower achieving students are missing more school than they did prior to the schedule changes. They related this finding to the fact that when a class is missed a student misses more material than in traditionally scheduled schools and that it appears to be harder to make up work missed.

STUDENT DISCIPLINE

The impact of the schedule on discipline was examined through the survey and focus group and individual interviews. While at the school site, the researchers also asked as to the number of discipline referrals, suspensions and expulsions. In every school, discipline referrals from classes and suspensions were reduced. More serious problems such as drug and weapons violations were not positively or negatively affected by the schedule changes. Since the responses were uniform and initial data supported them, no further collections were made on these categories.

Teacher and Administrator Perceptions Survey respondents at schools that changed their schedule report fewer discipline problems after the change in the schedule. In the Semester and Alternating Block schools, the schedule change does not seem to have affected student behavior negatively. In fact, there is a consensus that the school was "calmer," and fewer discipline referrals were being made by teachers. For example,

Alternating Block Teacher Comments

- "With fewer passing times in the hall and a less hectic pace in the entire day, this year quieter."
- "discipline problems seem to be down; since there are less changes in the hall, there is less opportunity for fighting and altercations."
- As far as behavior problems, if I were more tense, I wouldn't be able to handle the situation as well as when I'm more relaxed. That has a lot to do with my decorum and also with how the students are feeling. There is a sense of calm, not as frantic as before, and the children move from task to task and I think they are nicer people to be around and...I'm not sure that they don't learn as much because when you're dealing with a lot of conflict in your classroom, that is very disruptive to the learning process...
- With fewer passing times in the hall and a less hectic pace in the entire day, this year quieter.
- It helped our discipline problem because in those 7-8 minutes when 2,000 are trying to get from one end of the school to another.

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- I feel this year as opposed to last year, I have more tardies, more students being late to class. Now it's because they have so much more time that they take for granted they have extra time. Last year we only had five minutes between classes and this year we have eight and I'm all the way up on this end of the building so we're quite a trek from the other side of the building but I'm having a big problem with tardies this year that I didn't have last year.
- Discipline problems seem to be down; since there are less changes in the hall, there is less opportunity for fighting & altercations;

Semester Block Teacher Comment:

- "When they're good, they're very good and when they're bad, they're awful. If you've got someone who is off the wall and is a real discipline problem, 90 minutes is a long time. If you really have a kid with a lot of problems, on a shorter schedule, you kind of grit your teeth and make it to the end, but they can be extremely disruptive and really throw off your teaching. But for the most part, my kids have been really pretty good. "
- "I think it's calmer than on a regular 6-period day where they're changing classes so often. They're not in the hall as much. I think because of the newness, people haven't been sure of the ground rules and I think there's been some consternation about that, but in the beginning of the year, it was a little wild and woolly, but I would have to say it's generally pretty calm."
- "Well, in business, I think it has really improved. We have had the fewest number of detentions and things like that. So it's been great."
- "We've had a horrible time in the math department this semester. It's all levels. I don't know what it is. All I know is that I've got 3 teachers who have a great deal of experience who generally had no problem before who are now having tremendous problems."
- "We get a 12-minute break between 1st and 2nd period and that seems to... I didn't like the idea when it was first proposed. I was dead set against it, but it seems to have calmed them down; gives them a mental break, physical break. I have actually had kids come talk to me during that 12-minute break which I found very unusual. Pleasantly surprising."
- "I found the kids calmer."

Semester Block Student Comments: (These comments are the consensuses at all schools) (Interviewer: How do students know in what classes they can get away with things?)

- "The teacher. Test the teacher. "
- "I think it's the teacher's personality. ...whether they discipline their students or not."
- "Teachers with discipline problems before with shorter class periods are still having discipline problems? "

Seven Period Teacher Comments:

- "You now have extra coverage all day long in the halls. We don't. It's been a positive thing in some ways. We don't have problem kids in the hallways. If you see 1 or 2, that's a rarity. Last year in the hallway, there were kids everywhere. It's been a very good year...because there's always a teacher stationed in the hall at all times."
- "Student behavior is a lot better because of our administrative duties."
- "There's no time for fights."

Even in the school which changed its schedule to a straight seven period day experienced improved student behavior, although for different reasons. For instance,

Seven Period Day Teacher Comments:

- "You now have extra coverage all day long in the halls. We don't. It's been a positive thing in some ways. We don't have problem kids in the hallways. If you see 1 or 2, that's a rarity. Last year in the hallway, there were kids everywhere. It's been a very good year...because there's always a teacher stationed in the hall at all time."

In summary, student discipline was positively affected by Alternative and Semester Block schedules. In the classroom, the consensus of teachers in the focus groups was, "There is a sense of calm, not as frantic as before, and the children move from task to task. I think they are nicer people to be around and...I'm not sure that they don't learn as much because when you're dealing with a lot of conflict in your classroom that is very disruptive to the learning process . . . " In the Alternating and Block scheduled schools, where classes don't change as much as under traditional schedules, we heard repeatedly again that the school seems "calmer." However, the following student comment was also the consensus at all schools. "Teachers with discipline problems before with shorter class periods are still having discipline problems."

AFFECT OF SCHEDULES ON STUDENT ACHIEVEMENT

The advocates claim that alternative high school schedules will not adversely affect student academic performance. The area of student achievement was examined in three ways to validate this claim first through the teacher surveys which asked for perceptions related to satisfaction with student achievement. Then, focus group interviews probed advances in student learning attributed to the schedule. Finally, these perceptions were reviewed against the statistical data provided by the schools in our sample. Two types of statistical data were reviewed. Student grades were examined first. Then, standardized test data

(SAT's, TAP, AP) were reviewed to further determine the impact of a schedule change on student achievement.

Is Learning more effective or easier? Teacher, student and parent opinions gathered from the focus group meetings tended to validate the survey responses and grade analysis. Learning, as reflected in grades, was positively affected in most Alternating and Semester Block scheduled schools with the advantage falling to Semester Blocked schools.

When the focus of the inquiry turned to the question of "Is learning within the block more effective, or is the course content easier?", teachers, students, and parents responded that students were experiencing a different learning environment. In Alternating and Semester Block schools, teachers were focusing on ideas more and facts less, and going more in-depth on subject matter. They see students at improving their problem solving and information processing skills. For instance,

Semester Block Teacher Comments:

- "Students are very excited plus, they're making better grades than they ever have before, and not just in business. They're saying in other classes, too. "
- "Students in math are not saying that. Ours are moaning and groaning and saying we're going too fast."
- "More kids are on the honor roll because they have fewer classes to concentrate on and only 4 final exams - not because of watering down. However, I do provide less diversity/variety of content."
- "Are there more choices? I don't think either one of those fits. Course content is not easier."
- "It is more effective because it's more concentrated ..."
- "I see them as thinking a lot more so than in my experience with other...but I don't know if that's true or not, it's just an ending sense that I get. A lot of that comes through discussion."
- "I think I see more of their ability to solve problems..."
- "I see it as more like problem-solving skills, i.e., what do you do if, and how do you approach that? Rather than facts and data - I don't know, again, whether that's my fault or theirs or where that problem might lie... Interviewer "is it a fault?" Well, I don't know. I feel that it is for some reason."
- "I see them as thinking a lot more so than in my experience with other...but I don't know if that's true or not, it's just an ending sense that I get. A lot of that comes through discussion."

- "I don't know if I have the papers and that sort of statistical evidence to back it up, but my perception is that they learn perhaps better on certain things and on other things, not nearly as well. For example, I think they learn how to (in English when I'm discussing things) function in a seminar situation. It functions better. Because there's more time for that. I think some things do suffer, though, whether it's my fault or the schedule or a combination, but things that might require just sheer repetition; that I sometimes don't do, because I feel like I need to move on to cover additional content. I don't know if those things..."
- "I don't feel it's watered down at all."
- "I would say watered down only because I was teaching different levels, so it's different. I don't hold ... different level kids accountable for the same sorts of thing."
- "I'll tell you what it's made me look at what's important and leave out the less important things. I'm not sure that covering 1,2,3,4 is important...I have to look and see what the concepts were, and I've got this amount of time to look at those concepts and it's made me focus on what's really important and I think that's been a positive thing. I have left out some things, but I'm not sure they were necessary. I'm not sure what I left out was ever worthwhile."
- "I think it's made us focus on the concepts rather than the little factual things."
- "It's a mixed bag. I would say... one of the things I really like to do with honors chemistry, is...have some experience in thinking for themselves and we would do that with essays and there's just not the down time to correct them, or for the kids to do them for that matter, along with the treadmill we're on. You're blasting through this stuff and if you slow down the pace, you're not going to do it and the kids are going to die in the AP. That's a constant – you have to do a certain amount of work and do it well with the kids. But, I just have to axe that out of my program. That was a good 1/3 of what I took a lot of pride in, so you have some other things where you could develop an idea and really conceptually move with that, but I'm not comfortable overall with what..."
- "We're experiencing the same thing in foreign language. We're not able to cover the curriculum that we used to cover. Not that we liked that schedule [six period] either, but this has really put a crunch on us and we feel that after 3 semesters a student would not be as proficient in the language as the student who's taken 3 years of a language. Nowhere near as proficient. And, we've also cut a lot of practice time. There's just not the time in the classroom for testing and evaluation, orally, that we used to have."
- "We cover what is needed, but what is extra is a problem. That's not at all the case. You can stand up there for 2 days, or for 2 hours and say 'I covered x amount of material' and you didn't cover it–you may have covered it, but you didn't <u>teach</u> it. That's not enrichment. And, that's part of the idea to take something sterile and make it real."

<u>Semester Block Student Comments:</u>

- "I just think it's a different kind of...not necessarily that one is better than the other, because if you have 6 periods you have the whole year, but you only have maybe a little every day, but in 4x4 you only have 4 classes, but more homework, so I don't think one is easier than the other one, but I think you learn as much."
- "...learning more and understanding more than last year. I used stuff learned in math first semester in science second semester. Last year it would happen at same time. "
- "Exams easier because you <u>just</u> learned the material. Learning better because you can focus better with only 4 classes a semester."

<u>Semester Block Parent Comment:</u>

- "My son is working at the same amount as before; his grades are fine/good. No mention of any particular class being better or worse. Actually lots of time to do chemistry labs. Also loved the teacher too. No way to tell if any emphasis on academic or subject."

- "My son likes the schedule because he gets more in-depth and interesting classes (more involved). When he was first told he would have to transfer because of the boundary change, he was resistant. In fact, he wrote a letter to the superintend asking him to stay where he was... Now, he would never want to leave for another school."
- "There's two ways of looking at it. I think the number of facts that ended up in her head was probably less, but I think her attitude, and what they did equipped her well. She may have lost a few facts, but she gained some other skills -- processing skills..."

Alternating Block Teacher Comments:

- "I still have terrible grades because that is the nature of the beast, even though my students care... I don't know if they are learning more... I think unfortunately most of us feel like saying no but..."
- "Sometimes, I think students learn better because they take fewer courses a day. Still, they still have quite a responsibility. I'm not sure..."
- "The ones who are there every day are actually making better grades than I thought they would have. But the ones who are absent are, it really affects their grades terribly when they're absent one day."
- "More, no, but they're understanding more...You don't get as far."
- "I think we went to the Alternating Block because the data showed that you could have more reinforcement activities. It allowed for re-teaching of concepts, this is I think one of the reasons educationally that county moved in this direction. That goes hand in hand with the cutting down of content and more focus on quality and learning. Being able to go into more depth on a particular subject. To begin and go through a whole process and finish up in one session -- closure..."
- "I can see some real pitfalls for the average kid. I was concerned that average kids, c-level, they need to meet every day and here's why: homework assignments are easily lost or forgotten about, if not seen every day. Absences really hurt this level of student. Won't hurt the AP student. If they're absent, it hurts, especially with makeup. Then if say this allows for makeup, well you're still slowing down the whole educational process because of students not being present."

Alternating Block Student Comments:

- "teachers tend to go more in-depth in an idea...". "I think we are getting more in-depth... of the background of it."
- "It gives you more time to learn. You'd start to learn something and then the bell would ring before. You never got to finish."
- "I think learning is a problem with every class because you start something new on Monday and then you don't come back to it until Wednesday.."
- "If you learn something, it should stick with you, so I mean, it might be hard to remember it for Wednesday, but you need to remember it for longer than Wednesday. That's the purpose of learning, isn't it?"
- "it forces you to really learn instead of memorizing because you have to know it for a longer time. Short-term memorizing is not actually learning it."

Grades. Grades were the first measure of student performance reviewed to determine the impact of various schedule changes. In the surveys, teachers were asked to judge their satisfaction with student achievement as reflected in grades. Pisapia and Westfall (1996, p. 13) found that, when compared with their counterparts working in other schedules,

teachers reported significantly different levels of satisfaction with student achievement as reflected in the grades of their students. For example, they reported that:

The schedule significantly affects teacher satisfaction with their student's achievement as reflected in their grades (p=.00, Eta =.05). For instance,

- Teachers in Semester Block schools (m=.87; Eta=.06) report that student achievement as reflected in grades is significantly better than schools employing alternating long block schedules, (m=.36), and everyday short block schedules (m=.49).

The teacher's subject area also significantly effects their satisfaction with their student's achievement as reflected in their grades (Eta=.07). For instance,

- English teachers in Alternating Block schools using a study block are significantly more satisfied with student achievement as reflected in grades than English teachers in everyday short block schedules, and other Alternating Block schedules. Their level of satisfaction (m=.70) was similar to English teachers in Semester Block schools (m=.50).
- Math teachers in a sixth period schedule (m=1.00) were more satisfied than math teachers in Alternating Block schedules. Their level of satisfaction was similar to math teachers in Semester Block schedules (m=.85).
- Social studies teachers in Semester Block schools (m=1.12) and everyday short block schools were more satisfied than social studies teachers in Alternating Block schools.
- Vocational teachers in Semester Block schools (m=1.19) and six period day schedules were more satisfied than vocational teachers in Alternating Block schools that their students are gaining an in-depth understanding of the subject matter (p=.00, Eta=.06), and (2) whether teachers believe that their students are learning as much as they should be this academic year (p=.00, Eta=.07).

A grade analysis was conducted to validate these perceptions and determine if schools which changed their schedule improved after a schedule change and to contrast teacher opinion with actual grades received by students. Table 8, displays the GPA's of five schools which such data was available.

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Table 8
Grade Analysis for Five Schools Which Changed Their schedules

Student Grades Before and After Scheduling Change												
	Short Block		Alternating Block					Semester Block				
	7 Period		AB1		AB2			SB1		SB2		
	Yr B	Yr A	Yr B	Yr A	Yr B	Yr A	2Yr A	Yr B	Yr A	Yr B	Yr A	2Yr A
A	7%	10%	10%	12%	19%	18%	21%	13%	21%	16%	20%	26%
B	27%	29%	32%	32%	44%	42%	43%	38%	40%	31%	32%	32%
C	36%	33%	35%	32%	28%	27%	25%	32%	24%	30%	26%	22%
D	12%	10%	9%	9%	5%	5%	5%	7%	6%	15%	12%	9%
F	17%	17%	13%	14%	5%	7%	6%	9%	8%	7%	9%	6%
Overall GPA												
	2.29	2.39	2.49	2.51	2.88	2.85	2.95	2.67	2.87	2.36	2.44	2.65
Number of Student Grades Analyzed												
	2519	3590	5944	8425	4177	6509	8523	6879	10490	9545	9577	10841
Student Enrollment												
	625	639	1816	1711	1637	1546	1437	1776	1518	1704	1673	1627

The data in Table 8 indicate that after the schedule change,

- GPAs increased at all five schools which changed their schedules, except one Alternating Block schedule school. The most significant increases were in the Semester Block schools. However, the Alternating Block schedule school which did not experi nce a schedule change the year after the schedule change experienced an increase in overall GPA two years after the change in the schedule.

- The increases in GPA are primarily attributable to more students enrolling in Performing Arts classes when a school moves to an alternative high school schedule. For example, Pisapia and Westfall's (1995, pp. 164-171), analysis of GPA by subject area in four of the five schools, found that in one Semester Block school four hundred and five students (405) enrolled in Performing Arts classes and eighty four percent (84%) of them received grades averaging 3.5 or better. At another Semester Block school, student enrollment in Performing Arts Classes increased from one hundred and eighty-one (181) students in 1994 (83% of them received grades averaging 3.5 or better) to three hundred and fifty-one (351) students in 1995 (92% of them received grades averaging 3.5 or better). The number of students taking Performing Arts classes also rose at two of the Alternating Block schools. In one school, 96% of the students in performing arts classes received grades averaging 3.5 or better. At another Alternating Block school, 79% of the students in performing arts received grades averaging 3.5 or better.

- In their 1995 study, Pisapia and Westfall (pp.151-156) also found no negative impact of Alternating and Semester Block schedules on students performing at different levels of achievement as judged by GPAs. In particular, the GPAs of honor's student, students who were meeting the schools expectations (average students), and students who were not meeting the school's expectations rose to a greater extent in the school which moved to a Semester Block schedule, than the two schools moving to an Alternating Block schedule.

- In their 1995 study, Pisapia and Westfall (pp.164-165) compared the student grades by subject area and found that science grades of students in Semester Block school experienced higher increases (24% above 3.5 to 39% above 3.5) than schools on alternating and short block schedules. Furthermore, science grades in Semester Block schools increased at a higher rate than other core subjects. English grades in the Semester Block school were also higher than those Alternating Block schools. Other core subject area grades were relatively unaffected by changes to alternative schedules.

These findings are generally supported by the comments of students and teachers during the focus group interview.

Semester Block Student Comments:

- "I am learning more. Like in history, I learned just as much as I did when I took it in 9th grade--just a shorter time period; you don't have to go through the whole year drawn out...you can get it over with real quick and you learn just as much."
- "I think I am learning better because I only have a couple classes to worry about. I can focus better?"

Alternating Block Student Comment:

- "My grades are better, but I don't know if that's because I've learned more. Maybe its because I'm realizing now that college is coming and I, you know, am taking school more seriously."
- "Mine are better than before."
- "I don't think the block has negatively affected any of my grades."
- "I was really killing myself for good grades last year and this year, with this scheduling, I've been able" to...it's been a lot easier... because I can manage my time better"

Seven Period Day Teacher Comments:

- "About the same."
- "I have lower grades than normal this year and I don't know whether it's the character of the class or is it time allotment. "

STANDARDIZED TEST SCORES

Student scores on standardized tests were examined to determine the impact of the scheduling models on generally accepted student performance measures such as the Scholastic Achievement Test (SAT), Test for Achievement and Performance (TAP), and Advanced Placement Tests (AP).

SCHOLASTIC ACHIEVEMENT TEST SCORES (SAT). The scholastic achievement test (SAT) scores for eleven of the twelve schools in the study are displayed on Table 9. The school not represented was a Semester Block scheduled school which did not have a senior class in its first year of operation. Results are as follows:

- One year after the change, four of the seven schools which changed to an Alternating or a Semester Block schedule experienced rising SAT verbal scores. However, over the lifetime of the change, (in some case's 1yr, and others 4 years) verbal scores rose in six of the seven schools with data beyond the first year of the change.
- One year after the change, three of the seven schools which changed to an Alternating or a Semester Block schedule experienced increases in SAT math scores. In two schools, math scores rose dramatically over the lifetime of the change cases
- Two and three years after the schedule change, four of the five Alternating Block scheduled schools experienced increases in verbal scores. Whereas, two of the five Alternating Block scheduled schools experienced increases in math scores two or three years after the change in schedules.

Table 9
Mean Student Performance on the SAT

	Student Performance Before and After Scheduling Change										Change	
	(1)		(1)		(2)		(3)		(4)		(1)	Life of
VERBAL	N	%	N	%	N	%	N	%			N	%
Short Block												
SXP	417	538	412	542	No Change in Schedules						-	+5
SP1	134	449	114	425	No Change in Schedules						-	-24
SP2	84	443	102	453		433					+10	-1.0
Alternating Block												
AB11	New School		167	509	196	499	198	514	199	519	NA	+10
AB12	217	500	274	502		500					+2	0
AB13	332	512	324	516	314	518		517			+2	+5
AB2	227	509	152	504	163	504	158	504	155	512	-5	+3
AB31	42	369	38	363	34	363					-6	-6
AB32	53	397	75	405	58	422					+8	+25
Semester Block												
SB12	356	514	337	519		510					+4	-4
SB13	298	519	292	509	285	509					-10	-10
MATH												
Short Block												
SXP	417	548	412	548	No Change in Schedule						-	0
SP1	134	423	114	425	No Change in Schedule						-	+2
SP2	84	452	102	455		441					+3	-9
Alternating Block												
AB11	New School		167	464	196	486	198	495	199	501	-	+38
AB12	217	497	274	499		485					+2	-1.2
AB13	322	510	324	532	314	510		524			+22	-44
AB2	227	490	152	454	163	454	158	452	155	485	-36	-4
AB31	42	383	38	356	34	344					-27	-39
AB32	53	393	75	400	58	418					+6	+25
Semester Block												
SB12	356	518	337	516		505					-2	-13
SB13	298	507	292	499	285	495					-8	-12
SB11	New School no Senior class											

TAP Scores. Table 10 displays student performance on the Test for Achievement and Performance (TAP) composite scale for all students and those who scored above the seventy fifth percentile on the measure. TAP is synonymous with the Iowa Test of Basic Skills and is given at the 11th grade.

- One year after the change, three of the eight schools which changed to an Alternating or a Semester Block schedule (for which comparable data were available) experienced rising TAP composite scores. All four of the schools, which demonstrated increases, were Alternating Block schedule schools. However, only one of these schools was able to maintain its improvement over the lifetime of the change (from 2 to 4 years). One Semester Block school demonstrated a 3% increase in TAP scores after three years.
- The schools which on a short block schedule, who did and did not change schedules, also experienced no positive changes in TAP scores, during the same years in which data was drawn from the alternating and Semester Block schools.

[Table 10 about here]

Advanced Placement Tests (AP). It is obvious from the results found on Table 12 that schools that have changed their schedules and have not changed their schedules are experiencing some declines in the percentage of who scored 3 or better on the tests for advanced placement into colleges. For instance,

- Two of the four Alternating Block scheduled schools experienced declines in the percentage of students who scored at three or better on the advanced placement tests.
- In the two Semester Block schools, the percentage of students who scored at three or better on the advanced placement tests declined.
- The school on the six period day schedule also experienced declines in the percentage of students who scored at three or better on the advanced placement tests.

Table 10
Mean student Performance on the TAP Composite Scale

	Student Performance Before and After Scheduling Change										Change	
	1 yr before		1 yr after		2 yrs after		3 yrs after		4 yrs after		1yr	Life of Chg
Composite	N	%	N	%	N	%	N	%			N	%
Short Block												
SXP	455	74%	253	74%	No Change in Schedules						-	0
SP1	223	49%	204	43%	No Change in Schedules						-	-6
SP2	139	54%	142	42%							-12	-
Alternating Block												
AB11	New School		250	65%	262	68%	282	66%	264	62%	-	-3
AB12	404	63%	381	59%							-4	-
AB13	364	72%	344	72%	323	72%					0	0
AB2	253	64%	261	66%	245	62%	274	64%			+2	0
AB31	125	29%	136	32%	148	34%					+3	+5
AB32	169	41%	166	46%	160	36%					+5	-5
Semester Block												
SB12	395	72%	338	70%							-2	-
SB13	379	58%	372	56%	362	57%	363	61%			-2	+3
SB11	New School		367	74%							-	-
% STUDENTS ABOVE 75%ile												
Short Block												
SXP		51%		53%	No Change in Schedule						-	+2%
SP1		20%		20%	No Change in Schedule						-	0
SP2		25%		12%							-13	-
Alternating Block												
AB11	New School			37%		42%		40%		41%	-	+4
AB12		37%		34%							-3	-
AB13		48%		45%		48%					-3	0
AB2		41%		40%		36%		37%			-1	-4
AB31		6%		2%		0%					-4	-6
AB32		2%		9%		9%					+7	+7
Semester Block												
SB12		50%		42%							-8	-
SB13		31%		27%		26%		28%			-4	-3
SB11	New School			50%							-	-

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With one exception, all schools, experienced fewer students sitting for advanced placement tests. This decline is likely related to the fact that colleges and universities are requiring students to score at the 4 or 5 level rather than the traditional 3 level for college credit, and fewer students are taking the courses and the exams.

Table 12
The Percent of Students who Scored 3 or Better on Advanced Placement Tests

Student Performance Before and After Scheduling Change									Change	
	1 yr before		1 yr after		2 yrs after		3 yrs after		1yr	3yr
%3 or>	N	%	N	%	N	%	N	%	N	%
Short Block										
SXP	113	92%	91	77%	No Change in Schedule				-	-15%
SP1	No Data Available									
SP2	No Data Available									
Alternating Block										
AB11	New School		32	29%	46	28%	73	55%	-	+16%
AB12	23	89%	25	77%					-12%	
AB13	101	74%	96	88%	81	80%			+14%	+6%
AB2	NA		26	33%	48	42%	44	26%	-	-7%
AB31	No Data Available									
AB32	No Data Available									
Semester Block										
SB12	94	78%	59	77%					-1%	-
SB13	N A		51	67%	29	72%	53	59%	-	-8%
SB11	No Data Available									

Semester Block Teacher Comments:

- "It's a mixed bag. You're blasting through this stuff and if you slow down the pace, you're not going to do it and the kids are going to die in the AP. That's a constant -- you have to do a certain amount of work and do it well with the kids. But I just have to axe that out of my program. That was a good 1/3 of what I took a lot of pride in, so you have some other things where you could develop an idea and really conceptually move with that, but I'm not comfortable overall with what..."

Semester Block Parent Comments:

- "They could not cover the AP material in AP Biology, I think. They didn't do it in English. Even the English teacher who is very experienced, did not get everything covered. Calculus, I don't think they finished where they should have and she's an experienced teacher. I think it's just trying to pack it all in." [first year on Semester Block]

CONCLUSIONS

Although the sample for this study was limited and therefore fixed conclusions are difficult to draw, there are several points which seem reliable.

- Alternating and Semester Block schedules do seem to improve student discipline. Schools on these schedules all report that they are calmer and more enjoyable places for teachers to work, and students to learn.

- Alternating and Semester Block schedules do not automatically translate into better attendance.

Alternating Block schedules, in particular, need to consider stringent attendance policies, particularly to correct students "skipping classes." In Semester Block schools, the issue is leaving school early rather than "skipping" classes. Either the school is not able to provide enough quality electives to attract students, or students do not sign up for those opportunities which are available. In any case, "early leaving" policies should be considered. In a focus group at a Semester Block school, a student who had transferred from a Semester Block school in another state said that Karms High School in Tennessee improved their attendance problem by instituting a "time for time" policy. Time for Time is a session to make up your classes. The student explained,

> "If you miss 5 days, you wouldn't get that credit because you've missed a lot, unless you make it up and there is a place, at school, to make it up before and after school two days a week. That's "time for time". If you got sick for a week, this was the big problem. It got close to where school or the semester was about to get out, so they'd have to write the Board and ask permission to make it up. If you miss 2 days, that's 8 time for times you have to make up and you have to stay before or after school 8 times. Students didn't like that so it gave more reason for them to stay in. That's where that 99% good attendance came from.
>
> You're making up work, you have to let your teacher know you're going to time for time and they send the work up to the classroom and then you're there for an hour and a half and then you just get one class. You can make up one class in one time for time. It sounds awful, but it kept a lot of people in school. Attendance was real good. Ninety nine percent (99%) for the school. I didn't miss a day and if I did, I was quick to make it up. 3 tardies was equal to 1 absence so you had to..."

- Grades, overall, seem to improve in both Alternating and Semester Block schools with the greatest increases found in Semester Block schools. While much of this increase is attributable to students taking elective courses, there is still an overall increase that must be attributed to the schedules. Learning is very intense in the Semester Block schools and less so in the Alternating Block schools. But, both types of schedules seem to encourage teachers to teach differently, i.e., focus on concepts rather than just facts, problem solving and information usage, and go more in-depth on subject matter. Students are definitely more responsible for their own learning in these schedules.

- Standardized test score results are illuminating. For example, the most positive impact seems to be on the verbal portion of the SAT. However, considering the change in teacher behavior and learning environment that these schedules provide this finding is not as unexpected. Math scores on the other hand are not experiencing the same "bounce" provided by the schedule and some discussion should occur to find out if the schedule itself is the limiting factor.

- The Test of Achievement and Performance is a basic skills test and is more affected by traditional teaching strategies. The results indicate that alternative schedules have not had any major impact on these measures. This finding also shows that if Alternative and Semester block schedules are to demonstrate their full impact other alternate achievement measures must be considered.

- Although the number of students sitting for Advanced Placement tests is dwindling, they are still an important feature for ten percent of the student body. In this regard Semester Block schools are having more difficulty adjusting to Advanced Placement timetables and requirements. In Semester Block schools which have been successful in this area, they have offered the Advanced Placement course for the full year.

As the advocates proposed, alternative block scheduling should accomplish three main intentions: (1) foster teacher classroom and work behaviors which foster greater student involvement in the learning process, (2) create better working conditions for students and teachers, and (3) not lower standards. The block scheduling advocates assume that if changes are made in the structure which allow new strategies to be implemented school and student achievement will improve.

Taken as a whole, our reports on teacher and student views of alternative scheduling, and this report on their impact on student behavior and achievement demonstrate that to a large extent the advocates' claims are accurate. Teacher and student work behavior does change. The learning environment is changed and those teachers who take advantage of it are finding success in student learning. And, student course choices are greatly expanded in alternative block schedules.

The claim that alternative schedules will not lower standards is more uncertain. The answer seems to lie in your definition of standards. They certainly don't lower attendance substantially, even though it may not improve it. They certainly improve school wide discipline and do improve student grades. If you believe that more student involvement in their learning and more in-depth learning is the standard, they do positively influence those features of teaching and learning. Whether these features translate into improvement on standardized measures is still open for review. For example, there is some evidence that the changes in teaching strategies are fostering improvements on the verbal portion of the SAT. However, the performances of students in schools using these schedules on other standardized measures are less impressive and bear some scrutiny. Yet, alternative schedules are important innovations which are already producing some important changes in teaching and learning.

ATTRIBUTES OF THE SCHEDULES

What should schools be like as organizations? When first order changes occur in the organizations technical system (i.e., the way teaching is delivered), second order changes in policy, structure, culture or resource allocation components of school organizations are necessary to support the first order change. For instance, moving from traditional teacher directed instruction practices to teaching for understanding (a first order change) requires changes in district and school organizations, such as alterations to facilities, new equipment (i.e., technology, different forms of staff development, and revised forms of student assessment, not just changes in curriculum and instruction (Leithwood, 1996, p. 22*.

Therefore, it remains our recommendation that decision makers should come to a consensus on what they wish to accomplish, what type of an educational delivery system they want to support, and then select the scheduling model with features that will advance their goals. For example, the respective characteristics of each scheduling model as revealed by this study are displayed on the matrix on the following page. (The characteristics described assume that teaching practices change.) The decision of which schedule to adopt becomes easier if one first determines the nature of the educational program they wish to foster. For instance, by comparing the goal of fostering more course opportunities for students with the features of the schedules on the matrix, the decision then is centered on the Alternating Block, Semester Block and Seven Period Day schedules. A similar comparative process can be used for each goal that decision makers adopt.

Table 13
ATTRIBUTES OF HIGH SCHOOL SCHEDULES VERIFIED BY STUDY

Research Questions	Perceived Schedule Attributes	Verified Schedule Attributes					
		6P	7P	AB1	AB2	AB3	SB
1. *What effect does the schedule have on school processes?*	Saves classroom time			X	X	X	X
	Increases length of class periods			X	X	X	X
	Decreases the number of class changes			XX	XX	X	XX
	Potential for scheduling twice a year						X
	Shortens amount of time available for instruction in any one course	X	XX				
2. *What effect does the schedule have on teacher classroom behavior?*	No course coverage adjustment required	XX	X				
	Fosters depth of coverage			X	X	X	X
	Fosters small group instruction			X	X	X	X
	Fosters whole class lecture	X	X				
	Fosters whole class instruction	X	X				
	Enables use of a variety of instructional approaches			XX	X	X	XX
	Fosters reliance on a textbook as primary tool	X	X				X
	Opportunity to individualize instruction	X	X	XX	XX	X	XX
	Provides opportunities for project work	X	X	XX	XX	XX	X
	Daily reinforcement of student learning	X	X				XX
	More immediate student testing						XX
3. *What effect does the schedule have on teacher work behavior?*	Fosters a team approach to teaching			X	X	X	X
	Fosters interdisciplinary teaching	nf	nf	nf	nf	nf	nf
	Provides additional opportunities for teachers to help students.				XX		
	Helps teachers develop closer relationships with their students.	nf	nf	nf	nf	nf	nf
4. *What effect does the schedule have on teacher working conditions?*	Fewer student/teacher classes per day			X	X	X	X
	Fewer student/teacher classes per semester						XX
	Students see fewer teachers each term and teachers see fewer students						XX
	More students per teacher per year						X
	Decreases number of students taught each day by a teacher			XX	XX	X	XX
	Instructional time is increased			X	X	X	X
	Teachers and students are able to focus on fewer subjects			XX	XX	X	XXX
	Increases planning time for teachers		X	X	XX		X
	Limits the number of preparations for teachers						XX

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Table 13
ATTRIBUTES OF HIGH SCHOOL SCHEDULES VERIFIED BY STUDY

Research Questions	Perceived Schedule Attributes	Verified Schedule Attributes					
		6P	7P	AB1	AB2	AB3	SB
	New beginnings each semester						XX
	Ease of attendance monitoring	XX	XX				XX
	No adjustment to longer classes	XX	XX				
	Teacher comfort with established routines	XX					
5. *What effect does the schedule have on student working conditions?*	Opportunity to take more courses		X	X	X	X	XX
	Summer school can be offered at no additional costs to student or school district						XX
	Students can repeat a failed course during the regular school year						XX
	Students are able to focus on fewer subjects			X	X	X	XX
	Students see fewer teachers each term and teachers see fewer students						X
	More student responsibility for education			XX	X	X	XX
	Easier to make up work	XX	X		XX		
	No adjustment to longer classes	XX	XX				
	New beginnings each semester						XX
6. *What effect does the schedule have on student behavior?*	Improved classroom attendance						XX
	Improved school attendance	nf	nf	nf	nf	nf	nf
	Exacerbates discipline problems in high schools	X	X				
	Leads to decreased dropouts	nf	nf	nf	nf	nf	nf
	Improved discipline problems			X	X	X	X
	Leads to decreased discipline referrals	nf	nf	X	X	X	X
	Less student boredom	nf	nf	nf	nf	nf	nf
7. How satisfied are teachers and students with their schedules?	Greater student satisfaction			X	X		XX
	Greater teacher satisfaction	XX		X	XX		XX
8. *What effect does the schedule have on student performance?*	Improved grades			X	X		XXX
	Improved TAP scores	nf	nf	nf	nf	nf	nf
	Improved SAT scores	nf	nf	X	X	X	nf
	Improved AP scores	nf	nf	nf	nf	nf	nf

SB = Semester Block. AB = Alternating Block. X = attribute, XX and XXX=increased level of impact. nf = not found in this study. na = not analyzed in this report.

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